SOPHORA IN HAWAII

Otto & Isa Degener

A letter from Dr. Ronald Melville of Kew, dated January 13, 1971, regarding the present status of the endemic Sophorae of the Hawaiian Archipelago, induced us to write the present article.

Hillebrand's Flora of the Hawaiian Islands, published posthumously in 1888, on page 108 describes a single endemic species of Sophora, namely S. chrysophylla (Salisb.) Seem., for the Hawaiian Archipelago. He locates the species on "Hawaii! Maui! Kauai!" The writers, and some other local botanists, know the genus from the Islands of Oahu, Molokai and Lanai as well. Mr. Alvin K. Chock, as a thesis submitted in partial fulfillment of the requirements for the degree of Master of Science in Botany at the University of Hawaii, published the results of his two year study of Hawaii Sophorae in Pacific Science 10:136-158 in 1956. The Degener collection deposited at the Field Museum was mailed him in January 1954 to aid him in his studies.

Counting such names as Sophora chrysophylla (Salisb.) Seem., and Sophora chrysophylla ssp. glabrata var. ovata subvar. ovata f. maunakeaensis Chock, the monographer recognizes as valid for the Archipelago 1 species, 4 subspecies, 11 varieties, 5 subvarieties and 12 forms. We are less conservative and judge the Islands to harbor more than one species, such as Sophora grisea Deg. & Sherff (in Sherff, Bot. Leafl. 5:24. 1951.) and S. unifoliata (Rock) Deg. & Sherff (ibid. p. 25), as well as one each from the Islands of Lanai and Molokai. We believe, also, the monographer should have considered character of legume of greater taxonomic importance. We consequently here are changing to different taxonomic ranks:

1. SOPHORA LANAIENSIS (Chock) Deg. & Deg.

Sophora chrysophylla sensu Rock, Indig. Trees Haw. Isl. 189. 1913. "A few small trees were found on Lanai just above the homestead of the former manager of the Lanai Ranch Co., in a small gulch all by themselves. Whether they were planted there by human hand or by birds cannot be ascertained, but the former may be more reasonable, as they were not found elsewhere on Lanai."
Not Sophora chrysophylla Seem. Fl. Vit. 66. 1865. "Insulis Sandwich, legit A. Menzies." (Brit. Mus.)
Sophora chrysophylla var. glabrata sensu Rock, Leg. Pl. Haw. 123. 1920. (Lanai.)
Not Edwardsia chrysophylla var. glabrata A. Gray in U.S. Expl. Exp. 429. 1854. (Hawaii.)
Sophora chrysophylla ssp. glabrata var. lanaiensis Chock in Pac. Sci. 10:147. 1956. (Lanai.)

Sophora lanaiensis (Chock) Deg. & Deg.

Symmetrically round lacy tree with many branches arising from short erect trunk and bearing numerous long slender twigs longitudinally sulcate and during first year antrorsely appressed-golden-strigose. Leaves commonly with 7 - 10 mm. long petiole and 50 - 80 mm. long rachis both deeply narrowly grooved above and golden-strigose; leaflets about 13, opposite to alternate, the smallest below and the largest above on leaf, 10 - 30 mm. long, 4 - 11 mm. wide, oblong-oblanceolate, cuneate to minutely abruptly rounded to petiolule 1 mm. long or less, broadly rounded to somewhat truncate and emarginate with usually faint mucro at apex, golden-strigose especially beneath. Flowers up to 7 or even 9 per 5 - 10 mm. long inflorescence, on 10 mm. long pedicels having 1 mm. long incurved boat-shaped subulate bract at base. Calyx 8 mm. long from base to shallowly 5-dentate limb, with single 3 mm. deep sinus, strigose-pubescent without, glabrous within. Corolla: standard 26 mm. long, 9 mm. wide, the ovate-elliptic limb at apex somewhat obtuse and barely retuse; wings with 4 mm. long claw and 18 mm. long 5 mm. wide limb having obliquely truncate base and somewhat rounded apex; keel petals with claw 4 mm. long but blade 24 mm. long and 6 mm. wide, connate for 10 mm. near middle of lower margin, with acuminate apex. Stamens about 20 mm. long, abruptly dilated at base, glabrous. Pistil 25 mm. long, terete, strigose-pubescent except for thinner anterior fifth. Legume dark brown, somewhat glossy, straight, indehiscent, commonly 60 - 100 mm. long, with slightly curved 5 - 15 mm. long caudate apex; sterile basal part 5 - 20 mm. long, golden-strigose; fertile part more or less moniliform with 5 - 9 one-seeded segments 7 - 10 mm. long, 6 - 8 mm. wide, about 4 mm. thick, glabrate to somewhat strigose-pubescent, with 2 rows of 2 - 3 mm. separated rough 1 mm. high wings bordering narrow sides of pod, wings less prominent between seed-bearing areas; in case no seed develops the area remains sublinear. Seeds yellowish brown, smooth, glossy, thick, elliptic-globose, 5 - 6 mm. long, 3 mm. thick, hardly compressed.

The type, deposited in the Marie C. Neal Herbarium of the Bernice P. Bishop Museum, was collected by Rock "On the plateau leeward side, near Koele, back of Gibson [Walter Murray Gibson, 1822-1888] Homestead, flowering and fruiting July 29, 1910.George Campbell Munro (May 10, 1866 - Dec. 4, 1963), who was manager of most of the Island of Lanai for many years and saved much of its endemic vegetation from herbivores, wrote voluminous notes concerning Lanai plants about 1927. From a transcription we took a few years before his death, we find: "Sophora chrysophylla glabra, Rock. Native name mamane. Not common, found most commonly on the Kaluanui bench, one plant at Kanepuu from which a number are now growing." Chock cites a plant collected by Munro April 16, 1919, deposited in the Bishop Museum and in NY, from Kaluanui. In a letter to us of July 25, 1957, Mr. Munro wrote us expressly that S. chrysophylla and the var. glabrata grew on Lanai. In fact, regarding the latter, "Rock described this. I did not see it." Munro collected 950 Lanai specimens of ferns and flowering plants, which C.N. Forbes determined. A set

went to the Bishop Museum; another to the Hawaiian Sugar Planters Experiment Station; and the rarest (letter of Oct. 14, 1950) to the "British Museum, Sydney, Australia."

Thanks to the courtesy of the Dole (Pineapple) Company which rented us a cottage, we resided in 1963-64 for about six months on Lanai to botanize. During this lengthy stay, we discovered just mauka of the pineapple fields presumably the last stand of Sophora lanaiensis, beautifully rounded, bright green, lacy trees. About 75 herbarium specimens from this colony are being widely distributed under the following label: "Deg. & Deg. 31,383. Almost extinct! (4 thriving, spreading, 3 m. high trees with many branches arising from low trunk; prolific seeder but not a single seedling because of thick mat of Melinis grass; petals canary yellow; filaments whitish; anthers yellow; pistil greenish yellow.) Kaluanui Bench, Lanai. Decadent, dryish forest with deer browse line. Jan. 24, 1964." Today, with Lanai practically a hunting preserve stocked with feral goat, axis deer, mouflon and pronghorn, we surmise the four trees are no more. At least voucher specimens exist to show how beautiful a creation this species had been. The above description is based on No. 31,383, healthy trees with 5 - 9 seeds per legume; very rarely, perhaps due to faulty pollination, down to only one. Chock's description gives "the pod 1 - 5 seeded".

2. SOPHORA MOLOKAIENSIS sp. nov., nom. nud.

June 1, 1961, with Mr. Noah Pekelo, Jr., we drove to Maunahui, Molokai, and from there took a foresters' jeep road makai eastward to the lower edge of the rainforest. Here we discovered a rather gnarled, ugly mamane new to Science. We collected abundant material and, since Mr. Chock had published on the genus, turned over all our specimens to him. We intended to publish jointly, after a proper drawing had been executed. Before that could be accomplished, Mr. Chock and family removed to the Mainland and the package of specimens lies somewhere in the Museum where, no one knows. We believe this species extinct because, when we collected specimens from the plant in 1961 the area, thanks to the jeep road, was being bulldozed in strips for the planting of Pinus taeda to foster a lumber industry. Eventually, after the herbarium specimens have come to light, we shall properly publish an illustrated description.

The taxa with more or less unifoliolate leaves we prefer to alter in name as follows:

3. SOPHORA UNIFOLIATA (Rock) Degener & Sherff, s.s.

Sophora chrysophylla var. unifoliata Rock in Haw. Bd. Commrs. Agri. & For., Div. For., Bot. Bull. 5:44. 1919.
Edwardsia unifoliata Degener, Fl. Haw. Fam. 169c. 1932.
Sophora unifoliata Deg. & Sherff in Sherff, Bot. Leafl. 5:24. 1951.
Sophora chrysophylla ssp. unifoliata Chock in Pac. Sci. 10:155. 1956.

This taxon, now apparently extinct, grew in the Puuwaawaa region of Hawaii.

3a. SOPHORA UNIFOLIATA var. ELLIPTICA (Chock) Deg. & Deg.

Sophora chrysophylla ssp. unifoliata var. elliptica Chock in Pac. Sci. 10:156. 1956.

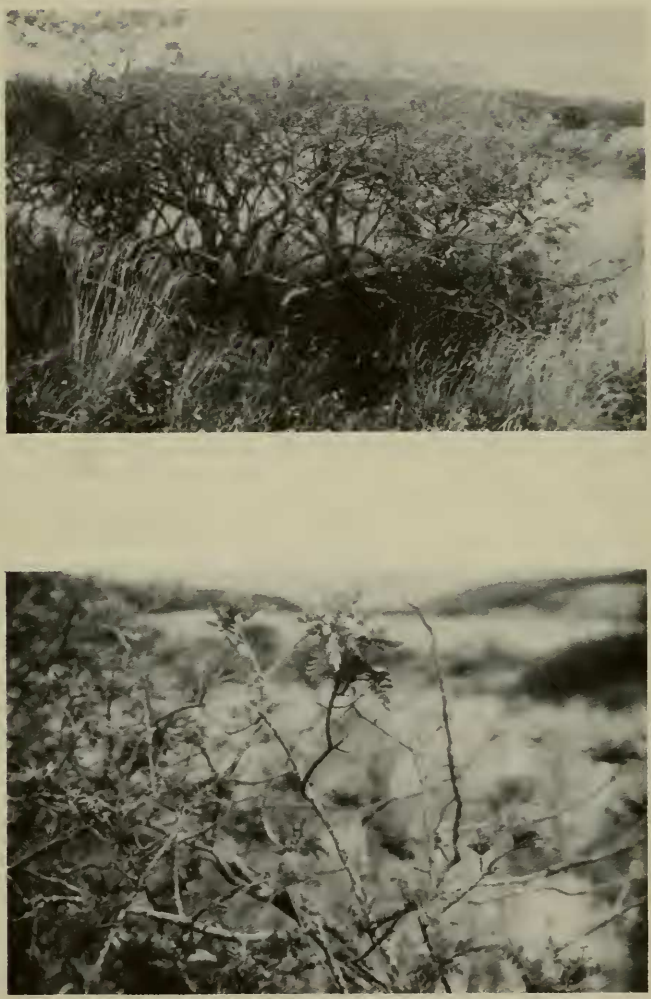
This taxon, known from Degener, Bertram & Clay 19,327, was collected in 1948 at Hokukano, East Maui.

3b. SOPHORA UNIFOLIATA var. KANAIOENSIS (Chock) Deg. & Deg.

Sophora chrysophylla ssp. unifoliata var. kanaioensis Chock in Pac. Sci. 10:156. 1956.

This taxon, collected by Forbes in 1920 and by Degener in 1952, is apparently endemic to the neighboring area at Kanaio, East Maui.

So few in the Hawaiian Islands realize the scientific value of our endemics, and ruthlessly destroy them to gain a few pounds of venison or board feet of lumber. Our protests fall on deaf ears. Perhaps some of our akamai legislators and citizens will heed Dr. Melville's statement in his letter to us: "It appears to me that Sophora chrysophylla is an extremely interesting example of diversification in a plant species comparable with that of the Darwin Finches in the Galapagos, and I think this comparison could be made use of in urging the conservation of this species."



The extinct (?) Molokai Sophora collected June 1, 1961.